	Type	L #	Hits	Search Text	DBs
1	BRS	L1	14211	(short or long) near8 half near8 life	US-PGPUB; USPAT
2	BRS	L2	140	1 and pulse near8 height	US-PGPUB; USPAT
3	BRS	L3	23	2 and time near8 distribution	US-PGPUB; USPAT
4	BRS	L4	576	1 and time near8 distribution	US-PGPUB; USPAT
5	BRS	L5	36	1 and pulse near8 height with discriminat$9	US-PGPUB; USPAT
6	BRS	L6	9	5 and x near8 ray near8 (detector or sensor or monitor)	US-PGPUB; USPAT
7	BRS	L7	250	1 and radioactive near9 nuclide	US-PGPUB; USPAT
8	BRS	L8	0	6 and radioactive near9 nuclide	US-PGPUB; USPAT
9	BRS	L9	2	3 and radioactive near9 nuclide	US-PGPUB; USPAT
10	BRS	L10	50	(short or long) near8 half near8 life	EPO
11	BRS	L11	1	10 and pulse near8 height	EPO
12	BRS	L12	883	(short or long) near8 half near8 life	DERWENT
13	BRS	L13	1	12 and pulse near8 height	DERWENT
14	BRS	L14	4	(short or long) near8 half near8 life	IBM_TDB
15	BRS	L15	0	14 and pulse near8 height	IBM_TDB

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=> s (short or long) (s) half (8w) life
L4       11097 (SHORT OR LONG) (S) HALF (8W) LIFE

=> s l4 and radioactive (8w) nuclide?
L5          44 L4 AND RADIOACTIVE (8W) NUCLIDE?

=> s l4 and pulse (8w) height
L6          23 L4 AND PULSE (8W) HEIGHT

=> s l4 and x (8w) ray (8w) (detector or sensor or monitor)
L7          11 L4 AND X (8W) RAY (8W) (DETECTOR OR SENSOR OR MONITOR)

=> s l5 and l6 and l7
L8           0 L5 AND L6 AND L7

=> s l6 and l7
L9           0 L6 AND L7

=> s l4 and alpha (8w) ray?
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L10         94 L4 AND ALPHA (8W) RAY?

=> s l4 and (alpha or gamma) (8w) ray?
L11        881 L4 AND (ALPHA OR GAMMA) (8W) RAY?

=> s l11 and l5
L12          7 L11 AND L5

=> s l11 and l6
L13          8 L11 AND L6

=> display l12 1-7 ibib abs

L12  ANSWER 1 OF 7  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2001:776973  CAPLUS
DOCUMENT NUMBER:          135:340864
TITLE:                    Analytical methods for bioassay samples in order to
                          evaluate internal exposure by reprocessed uranium
AUTHOR(S):                Uezu, Yasuhiro; Watanabe, Hitoshi; Maruo, Yoshihiro;
                          Shinohara, Kunihiko
CORPORATE SOURCE:         Radiation Protection Division, Japan Nuclear Cycle
                          Development Institute, Tokai Works, Tokai-mura,
                          Ibaraki, 311-1194, Japan
SOURCE:                   Hoken Butsuri (2001), 36(3), 207-212
                          CODEN: HOKBAQ; ISSN: 0367-6110
PUBLISHER:                Nippon Hoken Butsuri Gakkai
DOCUMENT TYPE:            Journal
LANGUAGE:                 Japanese
AB   Inductively coupled plasma mass spectrometer (ICP-MS) and .alpha
     . ray spectrometry (SSD) were combined and used for bioassay
     samples to evaluate internal exposure by reprocessed uranium.  ICP-MS and
     SSD combination method was useful for determination of long half
     -life radioactive nuclides (with 2 Figs. 7
     Tables and 10 Refs.).

L12  ANSWER 2 OF 7  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         1998:355666  CAPLUS
DOCUMENT NUMBER:          129:46556
TITLE:                    Radiation hazard control report
AUTHOR(S):                Koga, Taeko; Inagaki, Masayo; Morishima, Hiroshige;
                          Aoki, Yutaka; Takiguchi, Chizuko; Takahashi, Kazuhiro;
                          Tani, Kosuke
CORPORATE SOURCE:         Japan
SOURCE:                   Kinki Daigaku Genshiryoku Kenkyusho Nenpo (1997), 34,
                          27-46
                          CODEN: KDGNBX; ISSN: 0374-8715
PUBLISHER:                Kinki Daigaku Genshiryoku Kenkyusho
DOCUMENT TYPE:            Journal
LANGUAGE:                 Japanese
AB   An outline of the results of radiation control (β and . gamma
     . rays) at the nuclear reactor facility and the
     tracer/accelerator building of Kinki University from Apr., 1996 to Mar.,
     1997 is presented.  The radioactive nuclides measured
     included 41Ar, 40K, 7Be, 212Pb, 214Pb, 228Ac, 208Tl, 137Cs, 226Ra, and
     214Bi.  The measurement of environmental .gamma. ray
     dose was conducted using film badges, TLD, and area meters.  There was no
     effect of long half-life radioactive
     nuclides other than natural radioactive nuclides
     .

L12  ANSWER 3 OF 7  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         1973:508046  CAPLUS
DOCUMENT NUMBER:          79:108046
TITLE:                    Radiolanthanides as promising tumor scanning agents
```

AUTHOR(S): Hisada, Kinichi; Ando, Atsushi
CORPORATE SOURCE: Sch. Med., Kanazawa Univ., Kanazawa, Japan
SOURCE: Journal of Nuclear Medicine (1973), 14(8), 615-17
CODEN: JNMEAQ; ISSN: 0161-5505
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The tumor affinity of lanthanide ions was studied using Yoshida sarcoma-bearing rats. Animals with tumors approx. 2 cm in diameter were injected via the tail vein with the appropriate amount of **radioactive nuclide**, usually as the citrate, and groups of 5 were killed 3, 24, and 48 hr later. Specimens of tumor and organs were assayed with a well scintillation counter. All the radionuclides showed some affinity for the malignant tumor; the range after 24 hr, expressed as % of administered dose retained/g of tissue, extended from 1.34% for 170Tm through 169Yb, 177Lu, 153Sm, 160Tb, 141Ce, and 153Gd to 0.36% for 140La (given as LaCl3). The corresponding figures for the liver were 0.53 and 7.21%. In a 2nd experiment 67Ga was used as an example of a radionuclide with a **short half-life** (78 hr in contrast to 32 days for 169Yb). A mixture of these 2 isotopes was injected simultaneously into rats, which were killed 3, 24, 48, and 72 hr later. The tumor contents showed relatively little difference, viz. 0.85, 0.84, 0.63, and 0.5% for Yb and 0.75, 0.88, 0.68, and 0.62% for Ga. The liver content of Yb decreased slightly over the 72 hr interval from 0.6 to 0.5% whereas that of Ga increased from 1 to 1.5%. Theoretically, from the point of view of advantageous half-life, adequate energy of the principal **gamma ray**, and minimal beta emission, 167Tm apparently would be the preferred nuclide for tumor scanning (R. Chandra et al., 1971). However, other higher atomic weight lanthanides remain to be tested when their radioactive isotopes are available.

L12 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:454150 CAPLUS
DOCUMENT NUMBER: 65:54150
ORIGINAL REFERENCE NO.: 65:10090f-g
TITLE: Radioactive airborne dust. I. Seasonal variation of gross β-activity and analysis of low energy γ-emitters by γ-spectrometry
AUTHOR(S): Kang, Man Sik; Chung, Hack Pil; Sohn, Byung Ki
CORPORATE SOURCE: Army Res. Lab., Seoul, Korea
SOURCE: Kisul Yon'guso Pogo (1963), 2, 91-6
CODEN: KYGPAF; ISSN: 0368-7244
DOCUMENT TYPE: Journal
LANGUAGE: Korean

AB Radioactivity from the airborne dust collected in 1963 at a radiochemistry laboratory in Korea was examined (1) **Short half-life** of β-emitters in the airborne dust was 10 hrs., whereas **long half-life** was 1 month. Gross β-activity of airborne dust consisted mainly of **short half-life** nuclides. (2) Gross β-activity of airborne dust was 6.5 pc./m.3 throughout the year. It showed lower activity in rainy season. (3) Natural radioactive γ-emitters 232Pb, 208Tl, 214Pb, and 214Bi were found as low-energy nuclides in airborne dust, and most of the γ-activity was due to 212Pb. (4) Artificial **radioactive nuclides** in airborne dust were not detected, because of their low activity compared with that of natural **radioactive nuclides**.

L12 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:454133 CAPLUS
DOCUMENT NUMBER: 65:54133
ORIGINAL REFERENCE NO.: 65:10087e-f
TITLE: Why should we investigate nuclides far off the stability line

AUTHOR(S): Bergstrom, I.
CORPORATE SOURCE: Roy. Inst. Tech. Res. Inst. Phys., Stockholm
SOURCE: Nuclear Instruments & Methods (1966), 43(1), 116-28
CODEN: NUIMAL; ISSN: 0029-554X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An analysis of the nuclear chart shows that there should exist more β-unstable nuclides (including n-, p-, and α-emitters) than hitherto observed. The half-lives of these **radioactive nuclides** fall in the region 10-3-102 sec. which is the experimental reason that they have not been studied very much so far. It is emphasized that new double magic regions will be found among these nuclides as well as new regions of stable deformation. Qβ-values far off the stability line as well as a careful mapping of delayed n- and p-emitters and α-emitters will be of great importance for the semiempirical mass formula. In addition, half-lives and n separation energies are of astrophysical interest. Because of the high Qβ-values expected, highly excited states will be populated and β-decay yields information which usually is reserved for nuclear reactions. The extension of the systematics of fission and spallation yields into the regions of very **short half-lives** may increase our understanding of fission as well as other nuclear reaction processes. The exptl. study of these short-lived nuclides requires new exptl. approaches. 18 references.

L12 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:409302 CAPLUS
DOCUMENT NUMBER: 65:9302
ORIGINAL REFERENCE NO.: 65:1680d-e
TITLE: **Radioactive nuclides** of very **short half-life** produced by fast neutrons
AUTHOR(S): Monnand, Edouard
SOURCE: Rapport CEA-R - France, Commissariat a l'Energie Atomique (1965), CEA-R 2900, 20 pp.
CODEN: CMEAAQ; ISSN: 0429-3460
DOCUMENT TYPE: Journal
LANGUAGE: French
AB Nuclides having half lives in the range 10-5 to 1 sec. were prepared by using pulses of essentially monoenergetic 14.3-Mev. n obtained in the reaction T(d,n)4He. The β- and γ-energies, as well as the production cross sections of the nuclides, were studied. Decay schemes, where known, are tabulated, and the design of the detection equipment is discussed. The nuclides studied, together with the half-lives in msec. determined in the present investigation are: 12B (20 ± 0.4), 24Nam(20 ± 0.6), 88Ym1(0.332 ± 0.012), 88Ym2(14.6 ± 0.4), 114Inm(43.5 ± 2), 202Tlm(0.570 ± 0.010), 204Tlm(0.063 ± 0.002), 205Pbm(5.5 ± 0.3), 204Pbm(0.126 ± 0.006), 207Pbm(830 ± 30), 208Bim(2.56 ± 0.1).

L12 ANSWER 7 OF 7 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 1991(10):117833 COMPENDEX
DOCUMENT NUMBER: 9110117274
TITLE: Cesium-137 and potassium-40 contents in tissues of Japanese bodies.
AUTHOR: Aoki, Toru (Kyoto Univ, Kyoto, Jpn); Yamamoto, Keiichi; Ujeno, Yowri
SOURCE: Annu Rep Res React Inst Kyoto Univ v 23 1990 p 154-157
CODEN: KURAAV ISSN: 0454-9244
PUBLICATION YEAR: 1990
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 1991(10):117833 COMPENDEX DN 9110117274

AB Cesium-137 that has a large fission yield and a **long half-life** (30.17 years) is one of the noticeable man-made **radioactive nuclides**.Since uptake of 137Cs via food chain may cause internal radiation hazards to human beings, its behavior and fate have been studied in various organisms and ecosystems.The present study deals with the 137Cs contents in the lung, the liver, the kidneys and the spleen removed from three Japanese bodies to know the present radioecological situation of this **radioactive nuclide** Japanese bodies.For technical reasons, we could not make uniform completely the shape of materials at the counting 137Cs **gamma rays**.Therefore, we adopted the method to compare the measured values of 137Cs with that of 40K, because 40 distributes uniformly in natural potassium, and is the nuclide suitable to correct the difference in counting efficiency based on the difference in the shape of materials.7 Refs.

=> display l13 1-8 ibib abs

L13 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1988:15410 CAPLUS
DOCUMENT NUMBER: 108:15410
TITLE: Short-time activation analysis in geoscience
AUTHOR(S): Grass, F.; Westphal, G. P.; Kasa, T.
CORPORATE SOURCE: Atominst., Oesterr. Univ., Vienna, 1020, Austria
SOURCE: Nuclear Geophysics (1987), 1(3), 253-61
CODEN: NUGEEP; ISSN: 0886-0130
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In **short**-time activation anal. elements having nuclides with **half-lives** down to the subsecond range are analyzed by measuring their .**gamma**.-**ray** spectra or the decay curves, applying in addition to a Ge(Li) or a Ge detector a Cerenkov and/or a neutron counter. To meet the demands for quant. **pulse height** anal. with rapidly varying count rates and spectra, a real-time correction of counting losses was unavoidable. The principles of the "loss-free counting system" in the virtual pulse generator version are presented. Tests for the stability of count rates down from 780 kcounts/s were made by the two source method, showing that the method is in perfect statistical control. For the main elements of geochem. applications, sensitivities obtained with a prototype system are listed. The total activities obtained with the system for activation anal. with **short**-lived nuclides up to 20 s **half-life** are given. Application in phosphorite anal. by γ-spectrum and decay curve anal. and in the anal. of NBS 1648 urban particulates by pulse activation demonstrate the usefulness of the method.

L13 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1986:157759 CAPLUS
DOCUMENT NUMBER: 104:157759
TITLE: Loss-free **gamma**-**ray** counting on the VMEbus
AUTHOR(S): Minor, M. M.; Shera, E. B.; Lillberg, J. W.
CORPORATE SOURCE: Los Alamos Natl. Lab., Los Alamos, NM, 87545, USA
SOURCE: CERN [Rep.] (1986), CERN 86-01, Proc. VMEbus Phys. Conf., 1985, 169-73
CODEN: CERNA6; ISSN: 0007-8328
DOCUMENT TYPE: Report
LANGUAGE: English
AB Loss-free .**gamma**.-**ray** counting is a technique of correcting for system counting losses in real time. The technique is useful when measuring mixed radionuclides with very **short half-lives**. A loss-free counting module was designed which interfaces **pulse height** nuclear ADCs to VMEbus

memory. Several techniques real-time correction of counting losses were developed. All employ add-N histogram memory where the integer weighting factor, N, is derived from the instantaneous counting losses present in the system.

L13 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1975:91497 CAPLUS
DOCUMENT NUMBER: 82:91497
TITLE: Lithium drifted germanium and FIDLER [Field Instrument For Detecting Low Energy Radiation] in situ spectrometry with emphasis on americium
AUTHOR(S): Roth, S. J.
CORPORATE SOURCE: Lawrence Livermore Lab., Univ. California, Livermore, CA, USA
SOURCE: Report (1974), UCRL-75519, 19 pp. Avail.: Dep. NTIS From: Nucl. Sci. Abstr. 1974, 30(2), 3362
DOCUMENT TYPE: Report
LANGUAGE: English
AB The results of in situ γ-spectrometry, especially on measurements of Am, performed principally at the USAEC Nevada Test Site are reported. With the predicted increase in dependence upon nuclear reactors, and the desired clean-up of contaminated areas, the Biomedical Division is attempting to design more sensitive .**gamma**.-**ray** detectors for measuring terrestrial Am and Pu. Because the associated γ-radiation from Pu decay is extremely weak, primary interest is in the 60-keV photon from 241Am (0.36 γ/disintegration), a **long** **half-life** daughter (433 yr) of 241Pu. The 239,240Pu concentration is from knowledge of the 241Pu/241Am ratio, measured by soil sampling and wet chemical, and the known 239,240Pu/241Pu ratio of the source material. In highly contaminated areas, the 239Pu contamination can be assessed directly by measuring the 129-keV (6.2 + 10-5 γ/disintegration), 375-keV (1.58 + 10-5 γ/disintegration, and 414-keV (1.51 + 10-5 γ/disintegration) γ-radiation. The characteristics of the detectors are given. The 70 cm3 Ge(Li) detector is of the closed and coaxial design, specially mounted to afford a low attenuation path for incident .**gamma**.-**rays**. FIDLER is a detector in which a 1/16 in. thick, 5 in. diameter NaI(Tl) crystal is coupled by a quartz light pipe to a selected 5 in. RCA 8055 photomultiplier tube. The detector assembly is mounted within a 5/32 in. thick stainless steel can and has a 0.010 in. thick Be entrance window. The general system consists of electronics and support equipment mounted within a completely mobile van. The data are processed in a 4096 channel **pulse-height** analyzer that permits some immediate data reduction They are recorded on magnetic tape, which is then returned to Livermore for computer processing.

L13 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1970:27448 CAPLUS
DOCUMENT NUMBER: 72:27448
TITLE: Gamma-gamma angular correlation measurements for short-lived nuclei
AUTHOR(S): Hayashi, Takeo; Okano, Kotoyuki; Yuasa, Kazunori; Kawase, Yoichi; Uehara, Shinichi
CORPORATE SOURCE: Kyoto Univ., Osaka, Japan
SOURCE: Annual Reports of the Research Reactor Institute, Kyoto University (1968), 1, 162-70
CODEN: KURAAV; ISSN: 0454-9244
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A 12-counter goniometer for γ-γ angular correlation measurements for **short**-lived nuclei (**half-life** less than a few min) was designed and constructed. It consists of 12 photomultipliers with NaI(Tl) placed radially at intervals of 30°

and 12 + 12 coincidence matrix circuit which follows 12 linear amplifiers and 2 + 12 single channel **pulse height** analyzers. Coincidence counts at 11 angles 30-33° were recorded simultaneously for each of the 12 counters. It has an advantage of reduced time factor 12 + 11 compared to the ordinary method.

L13 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1969:418541 CAPLUS
DOCUMENT NUMBER: 71:18541
TITLE: Determination of macrocomponents in meteorites by nondestructive activation analysis
AUTHOR(S): Csajka, Maria; Lavrukhina, A. K.; Szabo, Elek
SOURCE: KFKI Kozlemenyek (1969), 17(1), 25-37
CODEN: KFKKAN; ISSN: 0368-5322
DOCUMENT TYPE: Journal
LANGUAGE: Hungarian
AB Nondestructive activation anal. was used to determine Mg, Al, Ni, Co, Mn, Fe, and Si in 5 meteorites. Samples ≤2 mg. were irradiated with a flux of 5 + 1012 neutrons/cm.2-sec. (.apprx.10% of this fast neutrons) for 20-40 sec. Samples were irradiated with and without a Cd case to differentiate between activities induced by thermal and fast neutrons, resp. Standards were prepared by dropping known vols. of nitrate solns. on ash-free filter papers and drying; for Mg, Si, and Fe solid standards were used. The **.gamma.-ray** spectrum of irradiated samples and standards was measured by a NaI(Tl) crystal and a 256-channel **pulse height** analyzer in a predetd. sequence. The determination of Al by 28Al proved to be very sensitive, 10-3%, even in the presence of a 10-fold concentration of Si. The deviation was .apprx.4%. Si was determined in parallel with Al (differentiation was made by the different cross-sections of reactions 27Al(n,γ)28Al and 28Si(n,p)28Al). Co was determined by 60Com, 10.5-min. half-life, with an average deviation of ±6%. Ni can be analyzed by the 65Ni, but due to its **long half-life** with a low accuracy. The determination of Mn by 56Mn enables a very sensitive determination even in the presence of a 10-fold concentration of Fe with an average deviation of ±5%. The Mg content can be determined by 27Mg, the 0.84-Mev. peak of which coincides with the 56Mn activity of similar energy, but the great difference between the half-lives enables a fair differentiation. Fe content can be determined by the 56Fe(n,p)56Mn reaction only in the case of an Fe/mn ratio >100.

L13 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1965:466866 CAPLUS
DOCUMENT NUMBER: 63:66866
ORIGINAL REFERENCE NO.: 63:12301f-h,12302a-b
TITLE: Nondestructive activation analysis based on photoneutron counting
AUTHOR(S): Amiel, S.
CORPORATE SOURCE: At. Energy Comm., Yavne, Israel
SOURCE: Radiochem. Methods Anal. Proc. Symp., Salzburg, Austria (1965), Volume Date 1964, 2, 101-10, discussion 110
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The measurement of a specific **.gamma.-ray** of relatively high energy in a radioactive matrix is usually done with a scintillation spectrometer connected to an electronic discriminator. When unwanted **.gamma.-rays** of higher energy are present, the scintillator is connected to a single or a multichannel **pulse height** analyzer. In favorable instances, coincidence counting is used. When the energetic **.gamma.-ray** in question is a minor or trace constituent of the gross activity of a highly active sample, it is usually masked by the tail and sum-peaks of the much more

intense low-energy .**gamma**.-**rays**. An electronic bias or even **pulse height** analysis is then ineffective. Moreover, the high intensity of the background activity might cause overloading of the detector and paralyze it for a considerable fraction of the counting time. One solution is to use chemical purification, but this is frequently undesirable, and sometimes difficult or practically impossible due to the **short half life** of the radioactivity in question. The present method utilizes the well-known property of Be and D to emit neutrons upon interaction with .**gamma** .-**rays** of energies higher than the photo-disintegration threshold. This threshold is 1.67 Mev. for Be and 2.23 Mev. for D, so that lower-energy .**gamma**.-**rays** are discriminated against. The number of reactor-produced radionuclides which emit .**gamma**.-**rays** of energy greater than 1.67 or 2.23 Mev. is relatively small. The number is further reduced when only a specific half-life range is considered. The high degree of selectivity obtained thus makes photoneutron counting very useful in activation analysis. The apparatus used in the present work consists of a Be box, or a D2O container, at the center of which the irradiated sample is placed. The box is surrounded by a ring of 10BF3 neutron detectors embedded in a paraffin block. The pulses from the detectors are amplified and registered on a recording scaler. The determination by photoneutron counting of Al, S, Ca, Na, Mn, and other elements was studied in detail. In all cases the photoneutron activity was proportional to the content of radionuclide emitting the high-energy .**gamma**.-**ray**. The precisions obtained were 1 to 2% and the sensitivities were in the range 1 to 100 γ.

L13 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1962:452783 CAPLUS
DOCUMENT NUMBER: 57:52783
ORIGINAL REFERENCE NO.: 57:10523i,10524a
TITLE: Neutron activation analysis of oxygen in beryllium
AUTHOR(S): McCrary, J. H.; Morgan, I. L.; Baggerly, L. L.
CORPORATE SOURCE: Texas Nucl. Corp., Austin
SOURCE: Proc., Intern. Conf., Modern Trends Activation Anal., College Station, Tex. (1961) 24-7
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The **short half-life** of N16 resulting from the reaction O16(n,p)N16 is used to determine O. N16 decays in 7.4 s. to O16, which decays instantly, emitting 6- and 7-m.e.v. .**gamma**.-**rays**. After irradiation with 1.8 + 108 neutrons/sq. cm.-sec., the sample is automatically transferred to a 256-channel **pulse-height** analyzer. Transfer time is approx. 1 s., and counting is begun 2 s. after the end of irradiation The number of counts obtained in the O16 .**gamma**.-**ray** spectrum is proportional to the O in the sample. The limit of sensitivity is 15 p.p.m. for a 20-g. sample.

L13 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1960:79077 CAPLUS
DOCUMENT NUMBER: 54:79077
ORIGINAL REFERENCE NO.: 54:15001h-i,15002a-d
TITLE: Isolation of technetium by coprecipitation or anion exchange
AUTHOR(S): Ichikawa, Fujio
CORPORATE SOURCE: Japan At. Energy Research Inst., Tokai
SOURCE: Bulletin of the Chemical Society of Japan (1959), 32, 1126-9
CODEN: BCSJA8; ISSN: 0009-2673
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB (NH4)2MoO4 (50 mg.), was irradiated in a J.R.R.-1 Reactor for 2 hrs. at a

flux 1011 n/sq. cm.-sec. Since the half-life of Mo99 is 67 hrs. and that of Tc99m is 6.04 hrs., radioactive equilibrium is reached after 23.08 hrs. The irradiated sample is dissolved in 10 ml. H2O after a day. Two ml. each of the various precipitants is added to 1-ml. portion of this sample solution A 5% solution of Pb(NO3)2, CaCl2, BaCl2, AgNO3, or UO2(NO3)2 is used as the precipitant. When CaCl2 is used, 1 ml. of 3M aqueous NH3 is required for the complete precipitation of CaMoO4. The precipitate formed is separated from the supernatant solution, and the β- and . **gamma**.-**ray** activities of ppts. and supernatant solns. are measured by comparing them with the activities of the sample solution to which no precipitant was added. It was found that a 99.6% portion of Tc99m is copptd. with PbMoO4. About 70% of Tc99m remains in the solution after CaMoO4 is precipitated, but a few percent of Mo also remains by single precipitation Seventy percent of Tc99m is not precipitated with BaMoO4 or UO2MoO4. About 50-60% of Tc99m is copptd. with Ag2MoO4. The results are applied as an easy precipitation of Tc99m solution from irradiated CaMoO4, and in an isolation of Tc99m and Mo99 from fission products by copptn. with PbMoO4. (NH4)2MoO4 (50 mg.) is irradiated as mentioned above. The sample is dissolved in 1 or 2 ml. H2O and poured on the top of hydroxide-form anion-exchange Dowex 1 column. The column is washed with 10 ml. of 10% NaOH, and then Tc is eluted with HNO3, HCl, or H2SO4 of various concns. From the results it is shown that Tc is not eluted with 10% NaOH or 0.7N HNO3, but easily eluted with 3-7N HNO3. The following experiment was then evolved. Irradiated UO2(NO2)2 (20 mg.) is used as a starting material. Np239 is removed by a nitrate-form anion exchanger. Thus, about 50 ml. of 7.5N HNO3 solution of fission products is obtained. This solution is evaporated to dryness and redissolved in 1 ml. H2O and poured onto the hydroxide-form anion exchanger. The column is washed with 150 ml. of 10% NaOH, with 200 ml. of 0.7N HNO3, and finally with 20 ml. of 7.5N HNO3, .**gamma**.-**Ray** spectra of each fraction are measured by a 256-channel **pulse height** analyzer. The pure spectrum of Tc99m is found in the 7.5N HNO3 fraction. After 5 days Tc99m is disintegrated away almost completely, leaving impurities of **long half-life**. About 40-5% of Tc99m is recovered in 7.5N HNO3 solution Purity in .**gamma**.-**ray** activity is about 95% at the separation time.